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REVISED SYSTEM OF NATIONAL ACCOUNTS

CHAPTER XX

SOCIAL ACCOUNTING MATRICES

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XX. SOCIAL ACCOUNTING MATRICES

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List of Acronyms

AGE-Model	Applied General Equilibrium Model
CPC	Central Product Classification
CPI	Consumer Price Index
f.o.b.	free on board
ISIC	International Standard Industrial Classification
NDP	net domestic product
NNI	net national income
NPI	non-profit institution
SAM	social accounting matrix
SESAME	System of Economic and Social Accounting Matrices and Extensions
VAT	value added tax

XX. SOCIAL ACCOUNTING MATRICES

A. Introduction

1. Previous chapters which focus on accounts for institutional sectors have adopted a sequence of T accounts as the basic method of presentation. At the same time, it has been illustrated that the concepts and definitions of the System allow other methods of presentation. These serve to provide additional insights and to enable different types of analysis.

2. The presentation of national accounts in a matrix has a long and distinguished tradition. In the 1968 SNA, the accounting structure was explained on the basis of an illustrative matrix covering the full System (table 2.1 of the 1968 publication) and in addition much emphasis was given to the System as a basis for input-output analysis. By now, the input-output table is a widely used matrix framework to supply detailed and coherently arranged information on the flow of goods and services and on the structure of production costs. This matrix contains more information than T accounts for goods and services, production and the generation of income; for example, final consumption expenditure is shown by product or industry of origin and intermediate consumption is shown both by product or industry of origin and by product or industry of destination. Disaggregated linkages between these accounts are further developed in the SNA's Supply and Use Table, through a specification of output of categories of goods and services by industry - see tables and . However, those matrices do not incorporate the interrelations between value added and final expenditures. By extending a supply and use table, or an input-output table, to show the entire circular flow of income at a meso-level, one captures an essential feature of a Social Accounting Matrix (SAM).

3. <Chapter II, Overview> has demonstrated that the full sequence of accounts and balancing items for institutional sectors can also be presented in a matrix format - see tables and . In those tables, all transactions are presented for institutional sectors, whereby the Supply and Use Table, which uses a cross-classification by categories of goods and services and by industries, is not incorporated. In fact, the Supply and Use Table opts for a classification of rows and columns which is most suitable to describe the economic processes under consideration, namely the processes of production and use of products. This principle of flexible classification can also be applied to a matrix presentation of a wider set of accounts, to arrive at a SAM.

4. A SAM is defined here as: The presentation of SNA-accounts in a matrix which elaborates the linkages between a supply and use table and sector accounts, with special reference to an analysis of interrelations between structural features of an economy and the distribution of income and expenditure among household groups. Evidently, SAMs are closely related to national accounts whereby their typical focus on the role of people in the economy may be reflected by, among other things, extra breakdowns of the household sector and a disaggregated representation of labour markets (i.e., distinguishing various categories of employed persons). On the other hand,

SAMs usually encompass a somewhat less detailed supply and use table or input-output table. Since the design and construction method of SAMs should not be standardized, their presentation in this chapter also has an illustrative character.

5. Before an attempt is made to sketch a few possible SAMs, it seems appropriate to provide an elementary explanation of accounting matrices and their properties. To this end, section B of this chapter builds on the matrix presentation of SNA's institutional sector accounts in <chapter II, Overview> and highlights the advantages of using a matrix presentation which includes both input-output and sector accounts. Section C explains how SAMs, supplemented with some (non-monetary) satellite tables, can provide a flexible and yet consistent framework for socio-economic analyses. Section D then introduces and explains the structure of an illustrative SAM. Section E provides some guidelines to the design of classifications. These are commonly based on the standard classifications but further developed to reflect national circumstances and needs. In order to illustrate this, section E also contains a somewhat elaborated SAM and a full-fledged value-added submatrix. Section F then lists some variants and sketches a SAM including balance sheets. Finally, section G discusses the use of SAMs as a tool of statistical integration and as a framework for modelling and policy analysis.

B. A Matrix Presentation of SNA Accounts

6. This section elaborates on the general purposes that can be served by an accounting matrix, which is defined here as a presentation of SNA- accounts in a matrix. A crucial feature is the wide range of possibilities for expanding or condensing such a matrix in accordance with specific circumstances and needs.

1. A matrix presentation of several accounts for the total economy

7. Table XX.1 presents a number of important transactions of the System, aggregated for the total economy. Five types of (consolidated) accounts are distinguished: supply and use of goods and services, production, distribution of income, use of income, and capital transactions. In the last account, all these transactions with the rest of the world have been combined. The code numbers behind and below each account heading serve to facilitate the linkage of all tables in this chapter. 1/ A breakdown of value added payable by producers into various categories of value added payable by them, as recorded in the Generation of Income Account, is not shown in this matrix of transactions.

8. The figures which are presented in the tables of this chapter exactly

---

1/ As later tables will distinguish more accounts, this objective entails that the coding in this table may seem rather odd.

correspond to the numerical example worked out in the other chapters of this book. In all matrices, the boxes containing a balancing item have been framed with bold lines.

9. As already stated in <the annex to chapter II, Overview>, a matrix presentation permits each transaction to be represented by a single entry and the nature of the transaction to be inferred from its position. Each account is represented by a row and column pair and the convention is followed that incomings are shown in the rows and outgoings are shown in the columns. For instance, net domestic product (NDP) (1622) is payable by the economy's producers and received on the Distribution of Income Account. Table XX.1 shows this in cell (3&4&5,2), that is, in row 3&4&5 and column 2. Since this table distinguishes transactions with the rest of the world in a separate account, its diagonal items, that is, cells (3&4&5,3&4&5) and (7,7), only contain transactions among national institutional units

10. The row and column totals have not been named. In effect, some of these totals are not economically meaningful. Their main function in matrix accounting is to ensure that all accounts indeed represent complete balances, in the sense that total incomings (row sums) equal total outgoings (column sums). In turn, meaningful balancing items, which connect successive accounts, can only be derived if this condition is fulfilled.

11. Table XX.1 can be expanded to arrive at the reduced format matrix (table). This implies the following:

(1) Insert a Generation of Income Account between the Production Account and the Distribution of Income Account.

(2) Break down the Distribution of Income Account into a Primary Distribution of Income Account and a Secondary Distribution of Income Account.

(3) Add a Financial Account, an Other Changes in Assets Account, a Changes between Balance Sheets Account, a Net Worth Account and opening and closing Balance Sheets.

(4) Break down the Rest of the World Account, current and capital into an account for external trade, an account for other current external transactions and a Capital Account for the rest of the world.

and

(5) Add for the rest of the world: a Financial Account, an Other Changes in Assets Account, a Changes between Balance Sheets Account, a Net Worth Account and Opening and Closing Balance Sheets.

In the next section of this chapter, the method to (re-)locate each set of

transactions in an expanded matrix will be briefly discussed and illustrated (see table XX.2 below).

12. As a next step, this reduced format matrix can be disaggregated to show the full sequence of accounts including details for transactors and transaction categories, to arrive at the extended SNA-matrix (table). Naturally, it is also possible to distinguish both institutional sectors and transaction categories in a more consolidated accounting matrix, like table XX.1. A concise example of showing an account both by institutional sector and by transaction category is presented in the next section of this chapter (see table XX.3 below).

2. Possibilities for expanding or contracting an accounting matrix

13. Each entry in an aggregate matrix like table XX.1 can be considered as the grand total of a submatrix in which categories of transactors involved at either end of the set of transactions under consideration are presented. A very useful option in a matrix presentation of accounts is that different types of transactors and groupings thereof can be selected in each account, without giving up the coherence and the integration of the complete accounting system. This means that one may apply "multiple actoring and multiple sectoring", by choosing in each account a unit and a classification of units which are most relevant to the set of economic flows under consideration.

14. In principle, each account can be broken down in two rather different ways:

(1) by subdividing the total economy into groups of units;

and

(2) by assigning the categories of transactions shown in an account to various sub-accounts.

It is discussed next how these two options are applied when developing the aggregate accounts in table XX.1 into a matrix presentation of the System's central framework, including both a Supply and Use Table and sector accounts.

15. First, a subdivision of the total economy in each of the accounts could run as follows:

(1) Distinguish products in the Goods and Services Account and classify these by categories of the Central Product Classification (CPC).

(2) Distinguish establishments in the Production Account and classify these by categories of the International Standard Industrial Classification (ISIC).

(3) Distinguish institutional units in the Distribution of Income Account and classify these by institutional sectors, including a breakdown by sub-sector for non-financial corporations, general government and households.

(4) Distinguish institutional units in the Use of Income Account and classify these by institutional sectors, including a breakdown by sub-sector for general government and households.

(5) Distinguish institutional units in the Capital Account and classify these by institutional sectors, including a breakdown by sub-sector for non-financial corporations, financial corporations and households.

and

(6) If desired, introduce a geographical breakdown in the Rest of the World Account.

16. These subdivisions have two major consequences. First, for all categories of transactions distinguished in a single cell of table XX.1 it becomes clear which group of paying units has exchanged what with which group of receiving units. Secondly, the interrelations among various economic flows are revealed through detailed cross- classifications: mappings of one classification to another. For instance, in the example given above, a simple circular flow of income is presented, at a meso-level, through the following mappings:

(1) Submatrix (3&4&5,2) shows which institutional sub-sector receives net value added from which industries.

(2) Submatrix (6,3&4&5) shows which institutional sub-sector receives net disposable income from which institutional sub-sectors (naturally, if an identical classification is applied in the Distribution of Income Account and in the Use of Income Account, this is a one-to-one mapping, reflected by a diagonal submatrix).

(3) Submatrix (1,6) shows which category of goods and services is consumed by which institutional sub-sectors.

and

(4) Submatrix (2,1) shows which categories of goods and services are produced by which industry.

In this enumeration, the submatrices are identified by means of their location (row and column number, respectively) in table XX.1. The above sequence represents a closed loop because all account numbers appear just as frequently in the rows as in the columns. This demonstrates the circularity of the flows described.

17. The second option for expanding table XX.1 refers to a distinction of subaccounts. For example, table XX.2 presents a breakdown of the Distribution of Income Account into a Primary Distribution of Income Account and a Secondary Distribution of Income Account. This means that the diagonal item (3&4&5,3&4&5) in table XX.1 is split into property income flows on the one hand (cell 3&4,3&4), and flows of current taxes on income, wealth, etc. plus all current transfers on the other (cell 5,5). Analogously, compensation of employees, property income and taxes on production and imports from and to the rest of the world are separated from current taxes on income, wealth, etc. and current transfers from and to the rest of the world. As a consequence, a new balancing item, net national income (NNI), is introduced in order to close the first subaccount (Primary Distribution of Income). The balancing item of the last subaccount (Secondary Distribution of Income) is typically the same as the balancing item of the aggregate account.

18. It goes without saying that accounts need not always be broken down but that a further consolidation is also possible. For instance, the Distribution and Use of Income Accounts in table XX.1 could have been combined. As a result, the balancing item net disposable income would have disappeared.

19. The processes of subdivision (or aggregation) of categories of units and (de)consolidation of accounts are closely linked. In practice, a subaccount for one or a few transaction categories is inserted either because a separate classification is required for these categories, or because groups of receiving and paying units should be presented separately for the transactions in these categories. Naturally, an important criterion for maintaining or introducing a separate account is also that it yields a relevant balancing item.

20. When compiling such a matrix, it is convenient to start with designing an accounting structure which is relevant to the applications envisaged. Subsequently, in each account the most appropriate units and classifications of units are selected. However, in practice it will be an interactive process. Suppose, for instance, that there is a transaction category for which only total receipts and payments of transactors (the row and column totals of a submatrix) are known, and not who paid whom (the interior structure of the submatrix). This problem can be solved by the insertion of an undivided, dummy account.

21. To illustrate this, let us try to fill the Secondary Distribution of Income Account in a detailed version of table XX.2, assuming that sufficient data are available on the groups of transactors at either end of the current taxes and current transfer flows, except for miscellaneous current transfer flows. In this case, a single, aggregated account for the latter flows should be inserted. This is shown in table XX.3. The row of the additional account contains total miscellaneous transfer flows payable by each sector (outgoings of the Secondary Distribution of Income Account) and by the rest of the world, and the column shows such transfer flows receivable by each sector (incomings of the Secondary Distribution of Income Account) and by the rest of the world. Obviously, the items in submatrix (5A,5A) no longer contain national,

intersector miscellaneous transfer flows, and analogously miscellaneous transfer flows are eliminated from the vectors (5A,10&11) and (10&11,5A). Apart from this, the accounting matrix does not change, while the meaning of each balancing item is not affected at all.

22. The matrix which results from such manipulations presents a detailed and fully integrated picture of the economic situation, taking into account the data limitations that exist in the field of miscellaneous current transfer flows. In other words, if detailed information is not available on all transaction categories, this can be solved with the help of additional accounts. Conversely, if on some transaction category abundant information is available and considered relevant for the purposes of the matrix, then a separate account for this category can also be introduced, showing not less but more details (cf. section F.1 below). Finally, if, for instance, the Capital Account can only be compiled for three major sectors, this does not imply that the other accounts must also be limited to that number. Instead, in a single matrix any combination of classifications considered relevant and feasible can be presented.

3. Properties of accounting matrices

23. At this stage, some general properties of a matrix presentation of accounts can be listed:

(1) An aggregate matrix (like table XX.2) can present a bird's eye view of an economy as a whole; i.e., one page is sufficient to show the interrelations between main transaction categories leading to a set of domestic and national balancing items.

(2) An accounting matrix must always describe a complete economy, however small or large it may be. This implies that a matrix is not the most appropriate format for presenting the full sequence of accounts and balancing items for an isolated institutional sector, that is, without distinguishing an (aggregate) outside world.

(3) A detailed matrix presentation is very general; any sequence of T accounts for a complete economy can be transformed into a matrix, but not the other way round, because of the possibility to apply multiple actoring and multiple sectoring in a matrix. This is particularly useful when integrating a detailed supply and use table and sectoral data. It does not imply, however, that in all cases information is most efficiently presented in a matrix format (see point (7) below).

(4) A detailed matrix presentation is suitable for mathematical treatment using matrix algebra; this can also be of help when balancing the accounts.

(5) A detailed matrix presents a simultaneous breakdown of interrelated transactions by paying and receiving units; as a consequence, it is an appropriate format to reveal, at a meso-level, interrelations among economic flows; this includes those flows which involve two different types of units (e.g., final consumption expenditures of various categories of goods and services by a number of household sub-sectors).

(6) For a set of accounts giving a breakdown of transactions by paying and receiving units, a matrix presentation is more concise than other methods of presentation; the payment of one unit and the receipt of another unit involved in each transaction are represented by a single entry.

(7) A matrix is not the most efficient format for presenting a set of accounts if, on the one hand, the same unit and grouping of units are used in each account (including e.g., the Production Account) and, on the other hand, transactions are not broken down by paying and receiving units (refer to e.g., table). In addition, a matrix format is suboptimal if one wants to portray for institutional sectors full details of the classification of transactions, without specifying who exchanged what with whom.

and

(8) A detailed matrix is quite suited to experiments with alternative representations of transactions in accounts; in principle, transactions can be paid from one account and received by any other without upsetting the transparency of the system. However, this reshuffle generally leads to different balancing items (cf. <<paragraph 130>> below).

24. An aggregate matrix for the total economy can serve as a reference table for subsequent, more detailed tables. As soon as the reader is then introduced to a detailed presentation of parts of the System (supply and use table, sector accounts etc.), the relation of the detailed submatrices to the aggregate matrix should be clear through a system of codes. The matrix format is particularly advantageous if it is not possible or desirable to show an equally detailed classification in all accounts of the System. The 1968 SNA expressed this as follows: "By following a concise, economical notation, a good notation as mathematicians would say, we can see the wood and at the same time retain the trees." (paragraph 1.24).

25. The matrix presentation is a suitable tool to explore the flexibility of the System. For instance, one may further elaborate on the interrelations between the social and economic aspects of the System to arrive at a SAM. The SAM-approach is set out and illustrated in the next sections of this chapter.

C. The SAM Approach

1. Social accounting

26. A SAM applies the properties of a matrix format to incorporate specific details on various economic flows. Traditionally, it has been applied to specific types of analysis, focusing on causes and consequences of various aspects of inequality among household groups. For that purpose, it is crucial to show the detailed linkages which exist between the Supply and Use Table on the one hand, and the accounts for the institutional sectors on the other hand.

27. A SAM provides a framework and consistent (base-year) data for economy-wide models with detailed classifications of actors, such as industries, categories of employed persons and institutional sub-sectors, including various socio-economic household groups. The application of SAMs to model building will be elaborated in the last section of this chapter.

28. An important social concern is the level and composition of (un)employment. A SAM commonly provides additional information on this issue, via a subdivision of compensation of employees by type of person employed. This subdivision applies to both the use of labour by industry, as shown in the Supply and Use Table, and the supply of labour by socio-economic subgroup, as shown in the Allocation of Primary Income Account for households. It implies that the matrix presents not only the supply and use of various products, but also the supply and use of various categories of labour services.

29. In many cases, it is expedient to reconcile the SAM-figures and related data which are available from all kinds of dispersed sources. This leads to an integrated set of satellite tables, showing:

(1) Various stocks underlying the SAM-flows, such as size and composition of the population by household group (including the potential labour force), production capacity by industry and the possession of assets (e.g., agricultural land, consumer durables and financial assets) and liabilities (e.g., external debts) by sub-sector.

(2) A decomposition of (changes in) values into (changes in) volumes and prices; this refers not only to products but also to various categories of labour services, and to fixed capital formation by industry (cf. <<paragraph 63>> below).

(3) Related non-monetary socio-economic indicators, such as life expectancy, infant mortality, adult literacy, nutrient intake, access to (public) health and education facilities, and housing situation by household group (refer to Towards a System of Social and Demographic Statistics).

and

(4) Some re-routings (e.g., final consumption by household group paid for by government and non-profit institutions (NPIs).

Such an extended set of tables (i.e., a "core" SAM and its various satellite tables) may be called: a System of Economic and Social Accounting Matrices and Extensions (SESAME).

30. In particular, confronting (1) labour incomes of all employed persons as shown in the SAM, (2) a decomposition of these incomes into full-time equivalent employment and average wage rates and (3) the potential labour force by type of person and household group (expressed in "full-time" equivalents), yields detailed information on the composition of unemployment and an aggregate indicator ("full-time equivalent unemployment") which is consistent, both conceptually and numerically, with the other macro-economic indicators; these can also be derived from the SAM-framework. Moreover, juxtaposing the head-count of a subset of the employed persons and the potential labour force in this data set agrees with unemployment as it is conventionally defined (cf. <<paragraphs 50, 53, 77, 89, 106 and 102>> below).

31. SESAME as outlined above becomes all the more important if one wants to obtain a more general insight into the state of human development without giving up a system's approach. Bringing together dispersed pieces of monetary and non-monetary information into a SESAME opens up possibilities for:

(1) rigorous theorizing based on micro-economic insights;

(2) formal modelling, including feed-backs from non-monetary to monetary variables;

and

(3) monitoring and forecasting the impact of government policies or external influences on non-monetary variables.

32. Key features in such a system are: integration and multiple classifications; in other words, a conceptual and numerical linkage of all kinds of related monetary and non-monetary phenomena, which are expressed in different measurement units. If, for instance, employed persons are classified by education obtained, including a group which is supposedly illiterate (completed less than three years of primary school, say), and the same is done for the non-employed potential labour force by socio-economic subgroup, a SAM plus concomitant population and employment matrices would reveal, e.g.:

- Adult literacy by socio-economic subgroup.

- Labour force participation rates of literate and illiterate

citizens, by socio-economic subgroup.

- Employment, average wage rate and labour income by socio- economic background and by education obtained of the employed persons, the illiterate being a separate category.

- Employment, average wage rate and labour income by education obtained (including the illiterate as a separate subgroup) and by industry in which these employed persons are engaged.

- National aggregates for these variables which are consistent with the more detailed data.

Such a data system would encompass more than a simple calculation of the literacy rate: it would enable analyses into the causes and consequences of this phenomenon and into the macro-economic trade-offs of policies which aim at improving the situation.

33. A SESAME registers for all variables both the national total value and its distribution among socio-economic household groups, categories of employed persons, etc. As a next step, a whole range of summary indicators can be derived from such a data set, including one or more indices which cover distributional aspects. Whatever set of aggregates is preferred, they would all share one crucial feature: every indicator is computed from the same, fully consistent statistical system. The advantages in terms of relevance and reliability are self-evident. This approach could equally well be followed when dealing with environmental issues (cf. the discussion of the SAM-approach in <Integrated Satellite Accounts for Environmental Accounting in chapter XXI, Satellite Accounts>).

2. SAMs as an illustration of the SNA's flexibility

34. In general, elements of the SNA-framework can be applied in a flexible way. In a SAM, it is often even desirable that concepts, accounting structure and classifications are tailored to the economy described, to the specific purposes for which the SAM is constructed, and to the availability of data, skilled statisticians, computer capacity, etc. in the construction process. It should be stressed however, that this reflects a choice in practice and not in principle: it is very well possible to construct a SAM and adhere to all the concepts developed in the central framework of the System.

35. Several features of a regular SAM are also incorporated elsewhere in this book. The specific purpose of a SAM is to render a complete account of the interlinkages which exist at the meso-level, through cross-classifications of transactions involving different units or groupings of units. An example may illustrate this point. Assume that the government would like to analyze the impact of two different scenarios for cutting back on its expenditures: one in which the federal civil service is trimmed, and another in which various investment projects in rural infrastructure are shelved. Quite apart

from the divergence in long-term impact, the immediate burden of both policy actions is likely to be borne by very different population groups. Suppose that in the second option many rural construction workers are laid off. In turn, the consumption patterns of their households and those of metropolitan civil servants may not be congruent; in case of an unequal share of imports in the respective consumption expenditures even the External Account may be affected differently. With a SAM, these linkages can be traced ex post. Besides, the effects can be simulated ex ante with the help of a SAM-based model, whereby various options exist as to the complexity of such a model.

36. In addition to a flexible application of the central framework of the System, some SAMs may incorporate adjustments which go beyond this, in order to serve specific analytical purposes. This concerns, for instance: recording the payment of taxes on products to the government on the Goods and Services Account and not on the Allocation of Primary Income Account; concomitantly, NDP is then valued at basic prices and not at market prices. Or: the use of concepts which are slightly different and tuned to a description of the behaviour of households (concerning the registration of interest on life insurance and of pension fund premiums and claims, the valuation of non-market output, etc.). In the SNA terminology, this means that one then enters into the realm of satellite accounting. Obviously, such SAMs must still represent a coherent and integrated accounting structure; wherever they deviate from the central framework, this should be incorporated consistently throughout the accounts. In many practical applications of SAMs, however, the concepts adopted are generally the same as those in the central framework.

37. At this stage, it is perhaps useful to work out an illustrative SAM. This is done below.

D. A Schematic Presentation of a Social Accounting Matrix

38. Table XX.4 exemplifies the design of a SAM which records all transactions distinguished in the System (that is, all flows excluding "other changes in assets"). It can be seen as a framework that results from a trade-off between analytic usefulness and commonly available data. In order to maintain a close linkage with the previous chapters, the concepts applied here are generally the same as those in the central framework. The most important deviation refers to a different meaning which is attached to the Generation of Income Account, in order to facilitate a linkage of detailed labour market analyses and the national accounts. This and some other novelties are elaborated below.

39. This table reflects an extension and a slight rearrangement of table XX.2. A Generation of Income Account, a Fixed Capital Formation Account and a Financial Account have been added, while for the rest of the world separate current and capital accounts have been distinguished. As discussed above, the addition of one or more accounts entails that some flows are recorded on another account. The numbering of accounts in this matrix exactly corresponds

to that in the preceding tables of this chapter.

40. The aggregate SAM shown here is meant as a summary table, to which subsequent, more detailed tables can refer. Possible types of classifications in each account are indicated in parentheses in the row and column headings.

41. The sequence of accounts in this table is the same as in the matrix presentation of the full sequence of accounts and balancing items (table). Turning that matrix into the aggregate SAM presented here implies:

(1) deleting the Other Changes in Assets Account, the Opening Balance Sheet, the Changes between Balance Sheets Account, the Closing Balance Sheet and the Net Worth Account, both for the total economy and for the rest of the world;

(2) inserting a Fixed Capital Formation Account;

(3) combining the External Trade Account and the Other Current External Transactions Account;

and

(4) recording a few transaction categories in a slightly different way, in order to enable specific SAM-type analyses.

42. An example may illustrate the last item on this list. In this SAM, taxes on products minus subsidies have been channelled directly from the Goods and Services Account to the Allocation of Primary Income Account (cell (4,1) of this table). Therefore, in cell (3,2) the term net value added, at basic prices replaces NDP, which is valued at market prices. As taxes on products relate to goods and services, and not to industries or sectors, the way they are recorded here is appropriate to an analysis of interrelations between economic flows at the meso-level. This applies in particular to import duties and value added tax (VAT). Naturally, the sum of total net value added at basic prices (1489 in the SNA numerical example) and total taxes minus subsidies on products (133) equals NDP, at market prices (1622), see table XX.2, cell (3,2).

43. Another example concerns the consumption of fixed capital. As this can be seen as a cost of production (refer to <<paragraph 5 of chapter VI, Production Account>>), and that means, it is not income, it is booked here as an outgoing from the Production Account and an incoming of the Fixed Capital Formation Account (cell 8,2). As a consequence, all balancing items are recorded net of depreciation in this table.

1. Supply and use table-as a SAM building-block

44. The first two rows and columns of table XX.4 contain an aggregated version of the Supply and Use Table, here explicitly linked up with the other accounts of the System. Note that rows and columns of the make- matrix have been transposed.

45. Column 1 presents the supply of goods and services. Although trade and transport margins do not need to be added to output at an aggregate level, they are registered in the top left-hand corner of this table because they are non-zero in a more detailed SAM (e.g., table XX.5 below), and because the structure of the aggregate matrix and the more detailed tables should be the same, to facilitate cross-references. Output at basic prices (3613) is shown in row 2. As explained above, taxes on products less subsidies (133) are not included in the output value, but directly booked on the Allocation of Primary Income Account for the government (row 4). Imports (499) originate from the current account for the rest of the world (row 10).

46. The elements in column 1 add up to total supply of goods and services, at purchasers' prices (4245). Row 1 shows the uses of goods and services, at purchasers' prices (also totalling 4245, of course): intermediate consumption (1902) in column 2, final consumption expenditure (1391) in column 6, changes in inventories (7) in column 7, gross fixed capital formation (405) in column 8 and exports, free on board (f.o.b.) (540) in column 10.

47. Row 2 shows output, at basic prices. Because of this valuation, the sum of row 2 (3613), and the concomitant sum of column 2, are exclusive of taxes minus subsidies on products. In turn, this means that this amount is not included in total net value added (1489) either, see cell (3,2). Consumption of fixed capital (222) is put directly on the Fixed Capital Formation Account (row 8 and column 2).

2. Focus on income generation

48. The third account records the generation of income and plays an important role. It is classified by (net) value-added category: (1) compensation of employees, (2) net mixed income, (3) net operating surplus and (4) other taxes and subsidies on production.

49. In the central framework, this is an intermediate account which mainly serves to derive operating surplus/mixed income as a balancing item (see e.g., table). Except for the payment of compensation of employees to non-residents, it does not record both ends of a transaction. Instead, it breaks down value added payable by the producers into various categories of value added payable by them (<<see paragraph 3 of chapter VII, Primary Distribution of Income Account>>). The breakdown is into value-added categories like those mentioned in the previous paragraph. It is only in the next account (on the allocation of primary income), that these incomes are received, namely by households and other institutional units.

50. Here, the meaning of this account is changed a bit, in order to accommodate transactions between two different types of units. In particular, this refers to compensation of employees, which is recorded as a transaction (work in return for compensation) between an institutional unit (employer) and a person (employee). In this SAM, employed persons are considered as separate units who receive compensation of employees in the Generation of Income Account and distribute this income to their household in the Allocation of Primary Income Account. These units are subsequently classified into groups of (self-)employed persons (see <<paragraphs 52, 76 and 77>> below) and these groups are then a subset of the value-added categories distinguished in this account. This representation serves to integrate labour market analyses and the national accounts.

51. The central framework of the System does not distinguish the employed person as a separate entity (i.e., as a separate unit). In this sense, the SAM discussed here falls under "satellite accounting". However, separating employed persons from the households to which they belong, is an operation which does not fundamentally differ from separating establishments from the institutional units (enterprises) to which they belong. In both cases, the smaller unit is more homogeneous and also fairly autonomous with respect to the economic process in which it is involved (income generation and production, respectively). These units thus serve to obtain a more accurate description of a specific economic process. It may be noted that an employed person as a unit can receive a compensation from more than one job (refer also to <chapter XVII, Population and Employment>).

52. The (residual) mixed income and operating surplus remain with the producing unit, but the classification of producing units need not be the same as in the Production Account. In effect, some classification by institutional sub-sector is particularly relevant to operating surplus and mixed income. This implies a cross-classification of these value added components by industry and institutional sub-sector in the SAM, analogous to the content of a similar table in <chapter XV, Supply and Use, Input-Output>.

53. If one wants to record domestic net value added as a balancing item in cell (3,2), the value-added categories must encompass all persons employed in resident enterprises. In column 3, compensation of non-resident persons employed in resident enterprises is then handed over to the rest of the world. This implies that a meaningful, national balancing item is only obtained in account 3 if compensation of resident persons employed in non-resident enterprises is added first. This is done in row 3 and for this purpose a separate category, resident persons employed in non-resident enterprises, may be created. An additional advantage of inserting this category is that it facilitates the estimation of employment as it is conventionally defined (cf. <<paragraph 77>> below).

54. Analogous to compensation of employees from abroad, other value added received from and paid to abroad should be registered in this table, in cell (3,10) and cell (10,3) respectively. For example: mixed income of a resident market-vendor in a neighbouring country where he sets up his stall one day a

week. Notice, however, that cell (3,10) only contains value added generated abroad by resident institutional units. This implies that value added created in any substantial amount of production in another country over long, or indefinite, periods of time is excluded; for that leads to the creation of a (quasi-corporate) unit in that country (see <chapter IV, Institutional Units and Sectors>). Only in a satellite approach, the border-line between resident and non-resident units could be changed somewhat, so that, for instance, direct investment income from abroad would be registered in the Generation of Income Account, while other investment income from abroad would remain to be registered in the Allocation of Primary Income Account.

55. The result of all this is that the Generation of Income Account is closed with a new balancing item (1493), in between total net value added and NNI. This balancing item, named total net generated income, at basic prices, gives total income earned by resident institutional units as a result of being engaged in production.

3. Regular distribution and use of income accounts

56. The Allocation of Primary Income Account of a detailed SAM presents household labour income(s) as a contribution by one or more (self-)employed household members. Among other things, this will indicate to what extent each household group depends on multiple sources of labour income. Apart from this, the transaction categories shown in the Distribution and Use of Income Accounts of a SAM are typically about the same as in the central framework.

57. In the row of the Allocation of Primary Income Account (account 4), net generated income is augmented with taxes less subsidies on products, and with property income from the rest of the world (55). The latter item is recorded in cell (4,10), which also includes taxes on production and imports less subsidies collected abroad and then handed over to the national government. National, intersector property income flows (692) are recorded on the diagonal (row 4 and column 4), for they change only the distribution, not the total of national income. To get NNI, this diagonal item, as well as property income and such paid to the rest of the world (34), must be subtracted from the total of column 4, which is derived from the identical total of row 4.

58. NNI (1647) appears on the credit side of the Secondary Distribution of Income Account (account 5). Current taxes on income, wealth, etc. and all current transfers from abroad (12) are also shown here. National, intersector current taxes on income, wealth, etc., social contributions and benefits and other current transfers (1088) are recorded on the diagonal (row 5 and column 5). Current transfers and the like to the rest of the world (45) are recorded on the debit side as is the balancing item, net disposable income (1614), which is put on the Use of Income Account.

59. In table XX.4, the Use of Income Account (account 6) records spending of net disposable income: final consumption expenditure on goods and services

and net saving (223), which is put on the Capital Account. This SAM does not include an account for the redistribution of income in kind and account 6 thus describes the use of disposable income and not the use of adjusted disposable income (refer to <<paragraph 89, 106>> below).

4. Intertwined capital, capital formation and financial accounts

60. In the design of this SAM, the Capital and Financial Accounts have been interlaced, with the Financial Account classified not by institutional sector but by type of financial asset. As a consequence, a disaggregation of this SAM would show, by institutional sub-sector, both acquisitions less disposals of various financial assets, see cell (9,7), and incurrence less repayment of various liabilities, see cell (7,9). Here, these two categories of transactions have been combined as far as the rest of the world is involved. This serves to include the aggregate balancing item net lending in table XX.4, though with a reverse sign when viewed from the standpoint of the total economy, see cell (9,11).

61. Row 7 presents the availability of funds to the total economy: net saving, borrowing (407), capital transfers receivable from the rest of the world (0), purchases (minus sales) of non-produced assets, except land, by the rest of the world (0), and the diagonal item, national intersector capital transfers receivable (62) plus intersector sales of land and other non-produced assets (7). If only net purchases of these assets are known, this may be shown in an extra dummy row which then adds up to zero (so that no extra column is required). Column 7 records how these funds have been allocated: changes in inventories, national intersector capital transfers payable, net fixed capital formation (183), lending (437) and capital transfers payable to the rest of the world (3). Obviously, the balancing item net lending of the nation (30) can also be derived from this account, namely by subtracting borrowing (407) from lending (437).

62. The main part of total volume changes in net worth probably consists of increases in fixed assets. If one is particularly interested in the dynamics of an economy, it is important to show in which industries production capacity has been expanded. This is the aim of the Fixed Capital Formation Account (account 8) inserted in this SAM. A more detailed table would then present:

(1) who invests where in the rows of this account - cell (8,7);

and

(2) where does one invest in what in the columns - cell (1,8).

In this case, the who refers to an institutional sub-sector, the where refers to an industry, and the what refers to a category of products. Note that through this Fixed Capital Formation Account the SAM shows at a meso-level the linkages which exist between fixed capital formation by institutional sector, as presented in the Capital Account, and fixed capital formation by category

of goods and services, as contained in the Supply and Use Table.

63. Often estimates of gross fixed capital formation, in column 8, and of the consumption of fixed capital, in row 8, are already available. As a consequence, the residual, net capital formation, shown in row 8 and column 7, should be found. In a supplementary table, net capital formation by industry could be decomposed into a "volume-effect", i.e., the increase in capacity of an industry expressed in terms of its maximum output volume(s), and a "price-effect", i.e., the price per volume unit of capital formation. As a result, the capacity effects of investment would be conceptually integrated in a national accounts framework. In practice, however, production capacity figures may be hard to find.

64. In the Financial Account (account 9), lending is presented row- wise, and borrowing column-wise. The balancing item is given in row 9, and not in column 9, because it is at the same time the balancing item of the Capital Account for the rest of the world. It equals net lending of the rest of the world (-30).

5. Consolidated external transactions accounts

65. The elements in the current and capital account for the rest of the world (accounts 10 and 11) have all been discussed above, except the Current External Balance (-33) shown in row 11 and column 10. If one wants to consider this balance from the perspective of the total economy, it should be put in row 10 and column 11 and the sign reversed.

E. Classifications in a More Detailed SAM

1. Some considerations regarding the definition of classifications

66. It stands to reason that SAMs for different countries select a common type of classification in each account, but that the actual (detailed) classifications are based on local conditions. Defining these taxonomies is a vital phase in the construction of a SAM, as its uses depend very much on the categories distinguished.

67. When it comes to the design of classifications, a broad, and perhaps slightly artificial, distinction could be made between two types of SAMs:

(1) SAMs principally used for monitoring;

and

(2) SAMs principally used for analysis.

The taxonomies in the first type of SAMs should be determined by what one

wants to monitor, or by the taxonomies in the object of comparison (e.g., a SAM for an earlier period or another economy). For the rest, not many general remarks can be made. The remaining part of this section will thus focus on classifications in an "analytical" SAM.

68. As transactions in a SAM are shown simultaneously as a receipt of one (sub)account and an outlay of another, they are usually cross- classified. The usefulness and feasibility of such cross-classifications should thus be considered when designing the taxonomies for each account. In an "analytical" SAM this implies that a well-balanced number of categories is distinguished in each ("endogenous") account. For example, in an analysis of the circular flow of income on the basis of 200 products, 50 industries, 2 labour categories and 3 household groups, a bottleneck appears in between the primary income and final expenditure flows. In other words, such an analysis requires that the number of labour and household categories is not much smaller than the number of products and industries.

69. The following considerations may serve to guide in defining a classification:

(1) the homogeneity of the categories distinguished, regarding the transactions recorded in the account under consideration; ideally, all units in a single category operate on the same markets, both on the supply (input) and on the use (output) side;

(2) the recognizability of the subgroups and their relevance to economic analyses and to policy preparation and monitoring (including e.g., key industries, regional aspects, and identifiable target groups);

(3) the stability and measurableness of the characteristic(s) on which the classification is based, and the fewness of survey questions which are needed to establish the classification.

and

(4) the degree to which the (cross-)classification(s) can be derived from (a combination of) existing data sources.

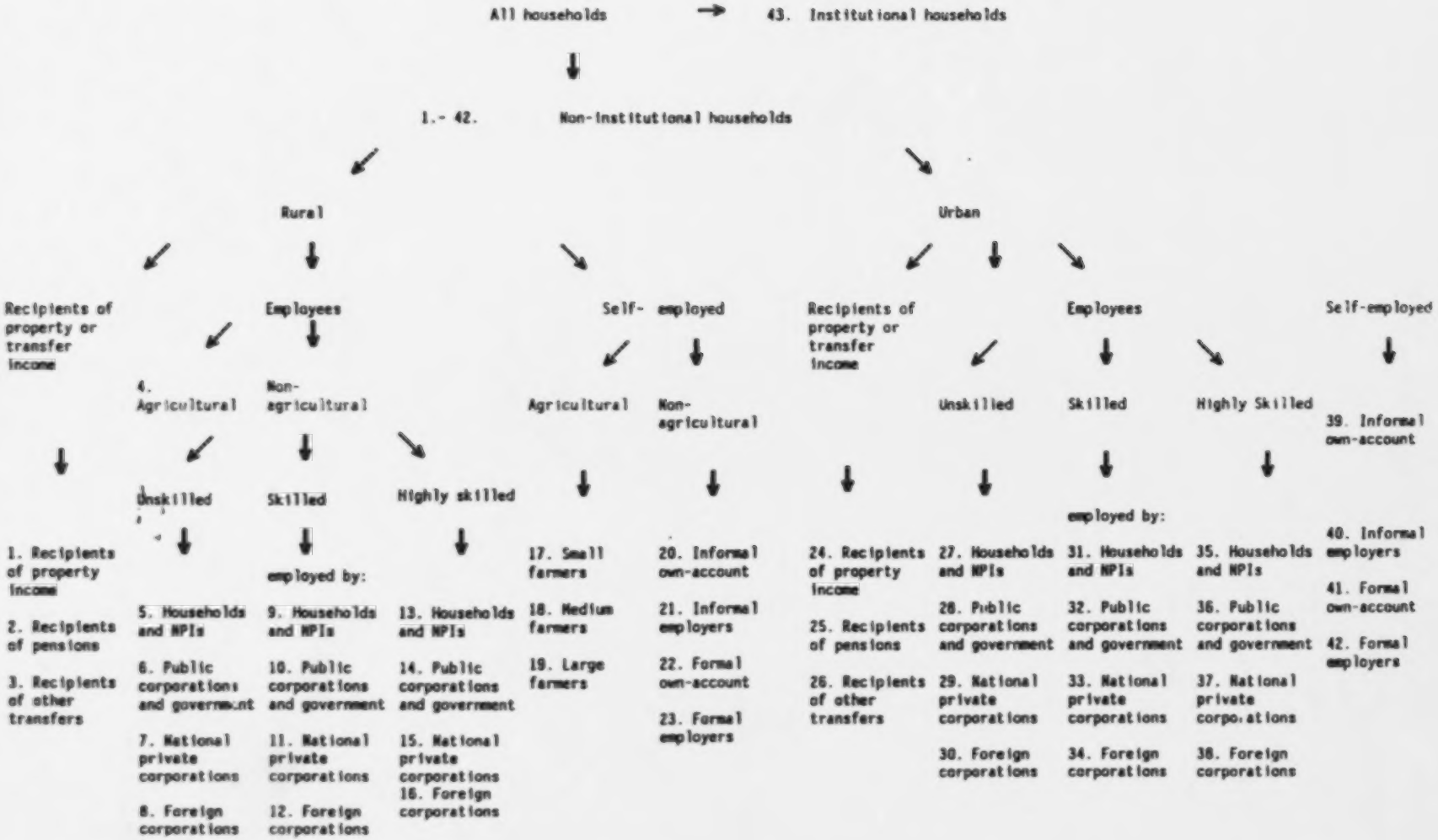
70. The classification of households is particularly crucial. Conclusions regarding (changes in) inequality, and perhaps even poverty, may have to be based on subgroup averages, and thus depend very much on how the population has been subdivided. On the one hand, any feasible number of household groups may lead to categories containing over a million people, say, and this must imply that average figures conceal considerable within-group disparities. On the other hand, integrating distributional statistics into a SAM considerably increases their reliability as well as their relevance. Summarizing, this heterogeneity should not be a problem if a proper classification is selected, i.e., if the shapes of the underlying within-subgroup distributions are fairly similar, or if the spread mainly concerns incidental or less relevant

differences (e.g., life-cycle_effects).

71. In the light of the considerations in the previous two paragraphs, main income source seems a more adequate criterion than income size when it comes to classifying households in an "analytical" SAM. This means that, in addition to the criteria determining the standard SNA sub-sectors, location (urban/rural or distinguishing several regions), possession of assets (e.g., agricultural land) and size and composition (with/without children) of the household may be considered relevant. A further breakdown could then be based on main economic activity of the household and main sub-sector of employment, occupation, educational attainment, etc. of the reference person. In a "monitoring" SAM, classifying households by income size or expenditure bracket cannot be ruled out, although the problem remains that income and expenditure are neither easily measurable nor stable and that they require a lot of survey questions - so that the information contained in e.g., household and population surveys which do not ask these questions cannot be linked up with such a SAM.

72. Obviously, in practice only a few classification criteria can be applied simultaneously. It is therefore most workable to start from an inverted tree-structure. Figure XX.1 exemplifies this process of successive subdivisions:

Figure XX.1: An Example of a Household Taxonomy using a Tree Structure



(1) All households are subdivided into institutional households and non-institutional households (refer to <<paragraph 137 of chapter IV, Institutional Units and Sectors>>, for a definition of institutional households);

(2) All non-institutional households are split into rural and urban;

(3) Both rural and urban households are split into i) recipients of property or transfer income, ii) employees and iii) self-employed (employers and own-account workers);

(4) Recipients of property or transfer income are split into i) recipients of property income, ii) recipients of pensions and iii) recipients of other transfers;

(5) In rural areas, the employee and the self-employed households are subdivided into agricultural and non-agricultural;

(6) Agricultural (rural) employees are not further broken down;

(7) Non-agricultural rural and all urban, employee households are grouped according to occupational category of the reference person (three skill categories) and subsequently according to (main) sub-sector of his or her employment: i) unincorporated enterprise and NPIs serving households, ii) public corporations and government, iii) national private corporations and iv) foreign- controlled corporations;

(8) Rural, agricultural self-employed households are further partitioned into three size-classes of land owned;

and

(9) Non-agricultural rural and all urban, self-employed households are bisected twice, i) into own-account workers and employers, and ii) into informal and formal establishments, whereby the former may be defined as e.g., firms which involve less than five (paid plus unpaid) full-time worker equivalents and which belong to an ISIC-category with low skill- and (other) capital intensity; the rest of the establishments are then considered as formal.

All in all, this yields 43 subgroups (23 in rural areas, 19 in urban areas and a separate subgroup for institutional households). This taxonomy may be considered as an example of the flexible allocation of households to sub-sectors which is advocated in <<section G.3 of chapter IV, Institutional Units and Sectors>>. If one wanted to derive all standard SNA sub-sectors through an aggregation of the subgroups distinguished here, a further subdivision of the (three) categories of farmers into own-account workers and employers would be required. Obviously, this example serves merely to illustrate, if only because it has been constructed with a particular type of country in mind;

other types of countries require a different classification-tree. When using this classification to (re-)process surveys, it is advisable to add an "unclassified" subgroup by way of safety net.

73. The classification of households need not be the same in each type of account. For instance, a breakdown of the category of other transfer income recipients may be more useful in the Secondary Distribution of Income Account than in the Allocation of Primary Income Account. Moreover, in some cases it may be necessary to define a "collective household sub-sector" for a few categories of transactions, such as final consumption expenditures of pension fund administration services

74. The classifications of other institutional units typically resemble those in the central framework (see table). Again, it is possible to introduce in the SAM proper a specific classification or a specific level of detail in each account. For instance, it stands to reason to show a more detailed taxonomy of financial corporations in the Capital Account than in the Secondary Distribution of Income Account. Or: a grouping of government units according to function (see <chapter XVII, Functional Analysis>) may be appropriate in the Use of Income Account but less so in the other accounts. Reversely, if for a certain transaction category only fairly aggregate data are available, this necessitates the use of a limited breakdown in some accounts, but not in all of them.

75. Some or all accounts for the rest of the world may be geographically subdivided, especially if the SAM-economy (country or region) belongs to a larger community where special (trade) regulations apply, or if its functioning is closely linked to a particular part of the outside world (e.g., through a tied currency).

76. The classification of (self-)employed persons may be based on a combination of background and (main) job characteristics, like sex, schooling, age, ethnicity and place of residence on the one hand, and occupation, type of job contract (full-time/part-time, permanent/ temporary) and region and sub-sector of employment on the other hand. Another consideration should be that within-group variations in relative wage rate changes are smaller than between-group variations. In common with the household taxonomy, an inverted tree-structure may be built. A classification by industry of employment is less relevant, because this is already shown in the SAM by the cross-classification of value added. If, for example, employees in establishments belonging to a corporate enterprise are separated from those working in unincorporated firms, and the industries are tabulated by ISIC-class, the value-added submatrix would show labour income in plantations separately from labour income in small-holdings growing fruit, nuts, beverage or spice crops.

77. As explained in <<paragraph 53>> above, resident persons employed in non-resident enterprises should constitute a separate group. If one wants to arrive at an estimate of employment by counting the number of employed person units, non-resident persons working for resident enterprises and employees working temporarily abroad should also be set apart. In this case, the group

of employed persons should evidently incorporate the self-employed for whose labour input an imputed remuneration should then be isolated from the rest of net mixed income in the SAM (see <<paragraph 102>> below).

78. Ideally, the residual net mixed income and net operating surplus are broken down into various more specific categories of primary inputs, like the services derived from using various types of land and various types of subsoil assets. However, some such breakdown is only feasible if sufficient data on the own-account input of an asset type are available and if a reasonable imputation for the price thereof can be found. For instance, if a well-developed market exists for the rental of farm-land of various qualities and if the (own-account) input of these types of land is regularly surveyed, part of agricultural mixed income and operating surplus could in fact be assigned to the services derived from using land. A similar procedure may be followed for some subsoil assets, for R&D assets like patents, etc. In this way, several categories of property income payable, including an imputation for self- earned property incomes, would be distinguished as sub-components of mixed income and operating surplus by industry. This serves to yield more insights into (1) which (primary) inputs have produced the outputs of a certain industry and (2) which sub-sectors have provided these inputs, without pretending that a complete enumeration is feasible; a remuneration for the use of some assets, like the organization of production or the external environment, cannot usually be isolated. The "unexplained" value added may then be classified by sub-sector to which the establishments in each industry belong (cf. <<paragraph 52, 76 above>>).

79. The value added category "other taxes on production" may be subdivided to single out dues which could in fact also be seen as a payment for the use of an input, like a levy on the discharge of oxygen- demanding materials into surface water. In this case, it is the budget mechanism and not the market mechanism which determines the price.

80. Products may be distinguished by type, adapting the CPC to specific circumstances and needs, followed by a subdivision of some of these categories into domestic products and imports (<refer also to chapter XV, Supply and Use Tables and Input-Output>). Sometimes, products which are apparently very much alike ought not to be grouped in a single category, because they are traded in totally different markets, at very different prices. As a rule, an important consideration in a taxonomy of products should be that within-group variations in relative price changes are smaller than between-group variations.

81. For industries, it is sometimes useful to supplement a local variation of the ISIC by a classification by institutional sub-sector of the enterprise to which the establishment belongs; there may be informal household firms and foreign-controlled corporations which produce similar products, like clothing, but these establishments do not operate on the same output or input markets. Analogously, production for own consumption by households may be presented in one or more separate "industries". In addition, key industries could be set apart. In the Fixed Capital Formation Account, a different (more aggregated) taxonomy of industries can be applied.

2. A somewhat elaborated SAM

82. Table XX.5 serves to illustrate what kind of information can be derived from a more detailed SAM. The main orientation of this particular table is to show:

- the circular flow of income, including a subdivision of labour income by a few categories of employed persons; this enables a more detailed analysis of the linkage between value added of industries and primary income of household subgroups.

- the interdependence between the distribution of income and the structure of production; among other things, this is related to diverging demand patterns of various household groups.

- the sub-sector allocation of saving, including a subdivision of fixed capital formation by investing industry; this enables a more detailed analysis of the linkage between fixed capital formation of sub-sectors and fixed capital formation by category of goods and services.

For purposes of presentation, the number of groups in each account is kept at a minimum. Obviously, a full-fledged SAM should distinguish more categories per account.

83. In table XX.5, each subaccount is labelled first according to its position in the aggregate SAM (table XX.4) and then according to a label specific to this table. Such a labelling system should be applied throughout the whole set of tables, in order to enable an easy linkage of (very) detailed figures to the overall state of affairs in the economy.

84. The discussion of this table focuses on elements which are less elaborated either in table XX.4 or in the set of Supply and Use Table plus sector accounts in the central framework. The figures in this table are also the same, or, where supplementary details have been inserted, add up to the same as the concomitant figures in those data sets.

85. The submatrix in the top left-hand corner contains a specification of the trade and transport margins. In the row for (trade and transport) services, it shows the relevant margins on agricultural and industrial products, and records the sum of these as a negative entry in the column for (trade and transport) services, such that the figures in this block add up, row-wise, to zero. Thus the valuation of uses (at purchasers' prices) in rows 1a-1c is not affected, while this method of recording ensures that the total of columns 1a-1c (total supply) is also valued at purchasers' prices. For some purposes, this may not be the ideal way of recording trade and transport margins. An alternative registration method is sketched in <<paragraph 105 below>>.

86. Due to the overlap of the use table and the Use of Income Account (rows 1a-1c and columns 6a-6b), a SAM reveals the differences in demand patterns across socio-economic subgroups. This information is generally more reliable than that available from a household budget survey which has not been reconciled with the national accounts.

87. In rows 1a-1c, columns 7a-7d show the changes in inventories, while columns 8a-8c record in which industry one invests in what kind of produced asset. Intermediate inputs (columns 2a-2c), government consumption expenditure (column 6d), and exports (column 10) are the same as in the Supply and Use Table. In columns 1a-1c, this also holds true for the (transposed) make-matrix (rows 2a-2c), for taxes on products less subsidies, which accrue to the government as primary income (row 4d) and for imports (row 10).

88. Columns 2a-2c contain various kinds of inputs by industry. The intersection between these columns and rows 3a-3g presents a decomposition of total net value added, at basic prices, by value-added category and by industry. In this submatrix, compensation of employees is shown separately for residents and non-residents, and the former is split into both sexes. This may point to an under-representation of female labour income in some industries. The block containing the consumption of fixed capital (rows 8a-8c) is a diagonal matrix.

89. In row 3d and column 10, compensation of residents working for non-resident enterprises is shown. Through a careful choice of the employed person unit (e.g., number of months worked in the reference year divided by 12), the number of national wage earners equals the total number of units in accounts 3a, 3b and 3d. As stated above, an additional distinction of various categories of self-employed persons in this account would have been particularly relevant to an analysis of national total (un)employment on the basis of a SAM. In turn, these categories would then have received an imputed labour income, with a concomitant reduction of net mixed income.

90. In columns 3a-3g, generated income is allocated to institutional sectors (rows 4a-4d), and to the rest of the world (row 10). The sectors in this example are: two household groups (employee households and other households), a category combining NPIs serving households and both corporations sectors, and the general government, including social security funds.

91. The data in rows 4a and 4b reveal to what extent both categories of households depend on female labour income. Most property income received by households originates from corporations (see rows 4a-4b and columns 4a-4d and 10). A small part concerns rent etc. directly received from other households (columns 4a-4b) and, for example, interest earned on foreign bank accounts (column 10).

92. A table like this reveals from whom all sub-sectors receive their property income and to whom they pay it. In this example, the government pays property income to the corporate sector and, to a lesser extent, to the rest of the world (see rows 4a-4d and 10 and column 4d).

93. The diagonal submatrix in the crossing of rows 5a-5d and columns 4a-4d contains net primary income by sector. The next block (rows and columns 5a-5d) discloses from whom to whom current taxes on income, wealth, etc., social contributions and benefits and other current transfers are disbursed. In this SAM, these amounts include imputed social contributions and exclude social transfers in kind. Current transfer flows from and to abroad (rows 5a-5d, column 10 and row 10, columns 5a-5d, respectively) consist of migrant remittances (from and to the household sub-sectors), non-life insurance premiums and claims (here, both paid abroad, by non-financial and financial corporations respectively) and taxes and current transfers related to international cooperation (exchanged with the government).

94. The diagonal submatrix in the intersection of rows 6a-6d and columns 5a-5d gives net disposable income by sub-sector, used for final consumption expenditure and net saving in columns 6a-6d.

95. Rows 7a-7d show the sub-sector acquisition of funds, through saving (columns 6a-6d), capital transfers receivable and net sales of land and other non-produced assets (columns 7a-7d and 11) and increases in various types of liabilities (columns 9a-9c).

96. An allocation of these funds is specified in columns 7a-7d. Special attention should be paid to sector differences in the allocation of net fixed capital formation to industries (see rows 8a- 8c). The industrial distribution of investments (by sub-sector) obviously provides an indication of the direction the economy is heading.

97. The elements in rows and columns 8a-11 have already been discussed above or are also shown in the central framework of the System.

98. A real, more detailed SAM cannot usually be presented on a single page, and even if this is technically feasible, showing much empty space on one, very large sheet of paper may not lead to an optimal absorption of information by the reader. Instead, the labelling system described above could be used to present one non-empty block (or a few small, adjacent blocks) at the time. This idea is illustrated in the next section.

3. A detailed value-added submatrix

99. Table XX.6 unveils part of the information contained in a full- fledged SAM. It looks at total net value added, i.e., cell (3,2) of the aggregate table XX.4, through a magnifying glass. To facilitate cross- reference with the Supply and Use Table, industries are only classified by ISIC-categories. Male and female labour incomes are broken down by category of occupation and place of residence of the employed person. Net mixed income is shown according to the location of the enterprise owned by a household, and net operating surplus according to the (sub)sector of the enterprise to which the establishment belongs. In this example, mixed income still includes an imputed remuneration for the labour of the self-employed. Obviously, the

(stylized) figures in this table add up to the concomitant totals shown in tables XX.4 and XX.5. For instance, total net value added appears in the bottom right-hand corner.

100. The additional insights which can be obtained from such a table include the following:

- the share of female labour income by industry and region;
- the degree of concentration of female labour income in a certain occupational category, by industry and region;
- the composition of labour income by occupation in each industry and region, for both sexes;
- the regional split of mixed income by industry;
- the weight of public enterprise and foreign-controlled corporations in the operating surplus of each industry.

In this table, the detailed information on compensation of employees comes from labour statistics; its integration into a national accounts framework will improve the relevance as well as the reliability of both this source and the national accounts.

101. Labour incomes as presented in this table should be decomposed into a volume and a price component by labour type and industry: full-time equivalent employment and (weighted, full-time equivalent) wage rates, respectively. Apart from that, a full-fledged SESAME also contains a table showing the allocation of these labour incomes and the concomitant employment to household groups (cf. <<paragraph 29>> above). Similar transactions might be shown for imputed labour income of the self-employed.

102. A data set which contains an estimate of imputed labour income of the self-employed person units as well as a split of all labour income into a volume and a price component, yields detailed labour data which are quite useful to all kinds of analysis and which are directly linked to all important macro-economic aggregates, including employment (that is, the total number of employed person units) and full-time equivalent employment (that is, total labour input volume). For that purpose, it would be useful to break down mixed income in table XX.6 into an imputed compensation for work done by the self-employed, including unpaid helpers belonging to the same household, and a residual which has more in common with the operating surplus of other enterprises. The imputed compensation per self-employed person unit could be estimated as hours worked times the hourly wage of an employee with similar background and job characteristics in the same industry. On the basis of such a SESAME, "conventional" employment and full-time equivalent employment can be specified according to labour category, and as well according to industry and household group as far as full-time equivalent employment is concerned. The distribution of "conventional" employment (by labour category) over household

groups can then be shown in another satellite table.

F. Alternative Social Accounting Frameworks

1. Alternative accounting structures

103. The SAM shown above stays fairly close to the sequence of flow accounts in the central framework. Most existing SAMs lead off with the Generation of Income Account, while the Goods and Services Account and the Production Account are placed lower and more to the right.

104. The following accounts are sometimes consolidated:

- Goods and Services Account and Production Account.
- The Primary and Secondary Distribution of Income and Use of Income Accounts.
- Capital Account and Fixed Capital Formation Account.
- Capital Account and Financial Account.

105. Depending on the purposes of the SAM and on data availability, separate accounts may be inserted for categories of transactions like:

- Taxes and subsidies on production and imports (classified by type; this facilitates a recording of taxes or subsidies which only apply to specific categories of use).
- Trade and transport margins (possibly split up and classified by type of distributed product; due to this separate account, these margins are excluded from all use values and from total supply of goods).
- Household final consumption expenditure (classified by purpose).
- Government final consumption expenditure (classified by function).

In the case of e.g., household final consumption expenditure by purpose it is not really an "account" that is added. Instead, such extra rows and columns should be seen as a "mapping": a cross-classification of the same information from different points of view. A real account shows actual transactions between units or contains at least two cells in either the row or the column of the macro-matrix (see table XX.4). In general, an account ends up with a balancing item, while a mapping does not.

106. Regarding the Redistribution of Income in Kind Account and the Use of Adjusted Disposable Income Account, two alternatives for their registration in

the central framework could be considered. First, in a "monitoring" SAM, they may be consolidated with the Distribution of Income Account and the Use of Income Account, respectively. This implies that the balancing item disposable income drops out; only adjusted disposable income is shown. Secondly, in an "analytical" SAM, these accounts may be relegated to the set of satellite tables; incorporating them in the SAM proper would complicate the estimation of average or marginal expenditure propensities. 2/

107. Satellite tables can also present a breakdown of several transactions shown in the SAM according to a third criterion. Examples of such three-dimensional tables are: (1) property incomes by type (rent, dividend, interest, etc.) as well as by paying and receiving sub-sector, (2) financial transactions both by type of financial asset and by creditor and debtor sector, and (3) all value-added categories by paying industry and by receiving sub-sector. Alternatively, this third aspect can be shown in the SAM proper, namely by inserting it (partly) in one or both classifications. Table XX.6 has illustrated this for the case of operating surplus, categorized by receiving sub-sector.

108. Conceptually, it is not difficult to incorporate in the SAM an Other Changes in Assets Account, classified by type of asset or by type of other change, and a Changes between Balance Sheets Account, classified by sub-sector or by type of asset. In such a framework, it is advisable to subdivide the Capital Account such that each subaccount yields one balancing item: net lending on the one hand and changes in net worth due to saving and net capital transfers on the other hand. The first subaccount (named Generation of Worth Account) then receives net saving from the Use of Income Account and settles the capital transfers to yield changes in net worth due to saving and net capital transfers, to be put on the Changes between Balance Sheets Account. In turn, the second capital subaccount (named Other Capital Account) receives this balancing item from the Changes between Balance Sheets Account and adds purchases minus sales of land and other non-produced assets to yield net lending, to be put on the Financial Account. Alternatively, transactions in financial assets can be expressed in gross instead of net terms, while other, positive and negative, changes in assets can be inserted in the crossings of the Other Changes in Assets Account and this Other Capital Account. This capital subaccount then yields changes in net worth due to other changes in assets as a balancing item. This balancing item is put on the Changes between Balance Sheets Account, which thus adds up to total changes in net worth. Finally, in the column of the Changes between Balance Sheets Account, changes in net worth due to other changes in assets are transferred to the Other Changes in Assets Account.

2/ As redistributed income in kind is by definition fully spent on certain goods and services, its size influences neither saving nor the final consumption of other products. Note, though, that the same applies to income imputed as a consequence of valuing output for own final consumption at equivalent market prices (subsistence production, services of owner-occupied dwellings, etc.) and to wages in kind.

109. SAMs can be extended to incorporate economic aspects which are not part of the SNA's central framework, such as environmental concerns, production of unpaid domestic and personal services for own consumption within households, or a broader concept of capital. In these information systems, non-monetary data have a crucial role to play (refer to the outline for a SESAME in section C.1 above). Another extension refers to the incorporation of balance sheets within the SAM proper. Evidently, in many cases the data required for such an extension are not available; yet, for the sake of completeness, a possible design of such a SAM is sketched in the following section.

2. An example of a SAM including balance sheets

110. Table XX.7 gives an example of a SAM which is oriented towards an analysis of the interrelations between economic stocks and flows. It includes an Other Changes in Assets Account, a Changes between Balance Sheets Account, and Balance Sheets. The Other Changes in Assets Account is classified by institutional sub-sector, with a separate account for the rest of the world, the Changes between Balance Sheet Account is broken down by type of asset and the Balance Sheets are shown both by sub-sector (plus the rest of the world) and by type of asset. Apart from this, table XX.4 has been altered as follows:

(1) The Primary and Secondary Distribution of Income and Use of Income Accounts have been combined.

(2) Current and capital accounts for the rest of the world have been combined.

(3) The separate Fixed Capital Formation Account has been consolidated.

(4) Purchases minus sales of land and other non-produced assets are shown in the Other Changes in Assets Account and not in the Capital Account.

(5) The Financial Account is subdivided by institutional sub-sector, plus an account for the rest of the world.

and

(6) A dummy account has been inserted to absorb the balances, for institutional sub-sectors and the rest of the world, of transactions in financial assets and in non-financial, non-produced assets; as in the column of this dummy account nothing is

recorded, it has been deleted. 3/

The first two changes of this list are optional; they were only made here in order to limit the size of table XX.7.

111. Otherwise, the current accounts (labelled 1-6) and all account codes in this table are analogous to those in table XX.4. The Capital Account (account 7) now records net saving and capital transfers, resulting in the balancing item changes in net worth due to saving and net capital transfers (row 14 and column 7).

112. The Financial Account registers in the row, that is, in cell (9,18), acquisitions minus disposals of existing financial assets and (minus) liabilities plus the simultaneous creation or extinction of financial assets and counterpart liabilities. The balance, net lending of the nation, is put on the dummy account for the balance of transactions in financial and non-financial, non-produced assets; cell (12,9). A similar procedure is followed in the Financial Account for the rest of the world (account 19); in this case, the balancing item is net lending of the rest of the world, see cell (12,19).

113. The row of the dummy account for the balance of transactions in financial and non-financial, non-produced assets (account 12) records net lending of the nation (cell 12,9) and net lending of the rest of the world (cell 12,19), which always add up to zero, and acquisitions less disposals of non-financial, non-produced assets, by institutional sub-sectors (cell 12,13) and by the rest of the world (cell 12,20), and the sum of these transactions is also zero by definition. Hence, it is not necessary to insert a column for this account.

114. The row of the Other Changes in Assets Account (account 13) shows:

(1) Purchases minus sales of land and other non-produced assets in cell (13,17).

(2) Other changes in the volume and price of produced assets in cell (13,16).

(3) Other changes in the volume and price of non-financial, non-produced assets in cell (13,17).

and

(4) Other changes in the volume and price of financial assets and (minus) liabilities in cell (13,18).

3/ This dummy account is a possible solution to the problem of incorporating in a SAM both balancing items of the System's capital Account, that is, (1) net lending and (2) changes in net worth due to saving and net capital transfers.

Purchases minus sales of existing produced assets are not included in this list, since they are recorded as part of gross capital formation in cell (1,16), see <chapter X, Capital Account>.

115. In the column of the Other Changes in Assets Account, the first item of the above list is put on the dummy account for the balance of transactions in financial and non-financial, non-produced assets; see cell (12,13). The balance of the other changes in assets, changes in net worth due to other changes in assets, is allocated to the Changes between Balance Sheets Account in cell (14,13). An analogous Other Changes in Assets Account is set up for the rest of the world (account 20); only in this case items (2) and (3) of the list in the previous paragraph are by definition excluded, while item (1) does not refer to land.

116. The Changes between Balance Sheets Account (account 14) adds several kinds of changes in net worth in the row and allocates these to the Balance Sheets of national sectors and the rest of the world in the column. Obviously, cells (14,7) and (14,13) add up to total changes in wealth held by national sectors - see cell (15,14), while cells (14,10&11) and (14,20) add up to total changes in wealth held by the rest of the world, see cell (21,14). If this account is subdivided by type of asset and the category of produced assets is broken down by industry, a submatrix based on cell (14,7) would show, among other things, net capital formation by institutional sector of origin and by industry of destination.

117. The Balance Sheets are first presented for the national sectors (account 15). Row-wise, total changes in net worth of the nation are added to the (net) opening stocks. This gives the net closing stocks, which are transferred to the Balance Sheets by type of asset (accounts 16-18). In this aggregate table, net opening worth of the nation can be found as the total of cells (15,16), (15,17) and (15,18), while net closing worth of the nation agrees with the total of column (or row) 15.

118. The Balance Sheets by type of asset (accounts 16, 17 and 18) contain consumption of fixed capital and net closing stocks in the row, and gross capital formation, net transactions in financial assets, net transactions in non-financial, non-produced assets, other changes in assets and the opening stocks in the column.

119. The combined current and capital account for the rest of the world (account 10&11) ends with changes in net worth due to current external balance and net capital transfers (row 14 and column 10&11). Finally, the Balance Sheet for the rest of the world (account 21) resembles the one for the national sectors, except that it is limited to financial assets and liabilities.

120. Subsequent tables may disaggregate parts of this matrix to show e.g., financial transactions by sub-sector and by type of financial asset, which then add up to cell (9,18) in table XX.7. In general, such a detailed set of tables would contain cross-classifications, by institutional sub-sector and by

type of asset, of both opening and closing stocks and various changes in stocks. In any case, the dummy account (account 12) is not subdivided.

G. Applications of the SAM

1. More integration of available basic data

121. <Chapter XV, Supply and Use Tables and Input-Output> has outlined the suitability of a matrix framework to compile the Goods and Services Account, the Production Account for industries and the Generation of Income Account in the central framework. As a SAM integrates both income and expenditure flows and the Supply and Use Table at a meso-level, it may serve as a format for the estimation of a wider set of accounts. The SAM-approach is particularly useful if one wants to reconcile detailed information on e.g., production and international trade with basic data from e.g., a labour force survey, a household budget survey and an investment survey for industries. In addition, casting accounts into a SAM-framework implies that matrix algebra can be applied to balance them. If a SAM is principally used for monitoring purposes, including comparisons with other economies, a large degree of international uniformity of these SAMs is important. Therefore, these SAMs may generally stick to the concepts of the SNA's central framework.

122. The abundance of data included in most SAMs may give the impression that it can only be constructed for countries with a wealth of statistical information. In practice, developing countries have taken the lead in compiling SAMs. Actually, it is in situations where basic information and other statistical resources are (very) scarce that it is all the more important to make the best possible use of whatever data are available. Integrating outcomes of all kinds of costly censuses and surveys into a consistent overall framework may increase both their relevance and their reliability. This applies in particular to household surveys and population censuses. Generally speaking, carefully acquired consistency at the meso-level leads to a higher degree of accuracy at the macro-level. Naturally, if there are too many holes in the basic data, the reliability of (parts of) the SAM remains dubious. In this way, building a SAM will also pinpoint gaps in the available data set and discrepancies in the survey concepts. This should then have a streamlining feed-back effect on both economic and social basic statistics.

123. As processing censuses and surveys is very time-consuming, and as the construction of a detailed SAM also tends to involve a substantial input of human resources, until recently SAMs have generally become available with a lag of several years. In fact, it is most practical to begin with building a full-fledged SAM only for years for which main surveys or censuses are held. It then serves as a benchmark data set, updated yearly or even quarterly, with the help of relevant indicators, to obtain the necessary timeliness without giving up too much in terms of reliability. A matrix framework is especially suitable in this regard, in view of the availability of various updating and

reconciliation algorithms. Obviously, some computerization of the construction process of a SAM will prove quite useful in its updating as well.

124. Integration of more basic data entails the possibility of more policy issues being monitored and analyzed interrelatedly. Above all, the linkage of employment and income distribution aspects to more macro- oriented objectives like NDP-growth, balance of payments equilibrium, stable price levels, etc. comes within reach with a SAM.

125. Since household surveys tend to underestimate not only total incomes or expenditures, but also inequality among households, a reconciliation of these sources with demographic statistics, an input- output table, wage surveys, profit and loss statements, government accounts, a balance of payments summary, financial data, etc. in a SAM will lead to a more reliable description of inequalities among household groups.

126. The applicability of a national accounts framework, like a SAM, to the measurement of poverty is less evident. In this case, households might be classified by income size-class, including a group with income below some pre-defined poverty-level. In practice, the limited capability of nation-wide household surveys in covering the poor may pose a problem. Besides, underestimation of income and expenditure in such a survey is not equally spread across the whole range of incomes or expenditures. Relatively large errors frequently occur at the tail of the distribution. In fact, part of the within-subgroup heterogeneity in a SAM is caused by false outliers. All the same, if the households are classified according to socio-economic characteristics, it may more safely be assumed that errors are not concentrated in specific subgroups, so that some scaling cum reconciliation procedure of original subgroup average (per capita) values will not distort the inequality between subgroups. Summarizing, on the one hand, it is rather hazardous to count the poor on the basis of national accounts, but on the other hand, a SAM which contains an elaborate classification of households may provide a dependable summary of "structural" poverty; it will identify subgroups in which the households are typically poor, it will show which needs cannot be properly met in these groups, and, above all, it allows for analyses concerning the causes and consequences of these circumstances.

127. Some of the above arguments apply to micro-macro links in general. A SAM may reveal the "structural" or average situation in the whole range of household groups. Again, a proper classification, resulting in fairly homogeneous categories qua behaviour, is crucial. In addition, micro-macro links are considerably facilitated if the concepts applied in the SAM are tuned to the perceptions at the micro-level.

128. Another application of SAMs refers to regional or supra-national accounting. In many instances, it is neither necessary nor feasible to construct complete regional SAMs, or input-output tables for that matter. However, the SAM-feature of multiple sectoring implies that the regional dimension can be introduced into the classifications wherever this is considered relevant and as far as data availability allows. For example, a

regional aspect can be introduced into the classifications of employed persons and households.

129. Interesting applications of a series of SAMs plus a set of commodity price and volume indices are, among other things: (1) tracing the relation between changes in the terms of trade and productivity by industry and the income distribution, and (2) fixing weighting baskets for household group-specific Consumer Price Indices (CPIs) which are consistent with the overall CPI.

2. SAMs as a tool for modelling and policy analysis

130. The structure of each SAM already reflects the relationships represented in an economy-wide model. Tailoring this model to specific circumstances and needs thus has repercussions on the organization of data in the SAM. As a rule, the outlays in each column of such an "analytical" SAM should be directly related to total receipts in the concomitant row. This could imply, for instance, that taxes and social contributions are transferred to the (Secondary Distribution of Income Account for the) government in accordance with their incidence: product taxes from the Goods and Services Account, other taxes on production from the Production Account, wage-related social contributions from the Income Generation Account, taxes on primary incomes from the Allocation of Primary Income Account, capital gains taxes from the Other Changes in Assets Account, taxes on wealth from the Balance Sheets, etc. Another example refers to other changes in assets: if one thinks that some of these changes, such as capital gains, are directly and to a large extent reflected in final consumption expenditure, these values could be booked as an incoming on the (Secondary) Distribution of Income Account. Evidently, in such a SAM the stress lays on a representation of the economic structure. The other side of the picture is that some conventional balancing item(s) can then no longer be derived from a single cell of the aggregate SAM (cf. property (8) of matrix accounting, as listed in <<paragraph 23>> above).

131. Analogous to an input-output table, a SAM provides a framework for a simple, linear model which is based on the inverse of the endogenous part of the matrix. In this case, the multiplier model is closed, at least concerning the linkages between primary incomes and final expenditures. When compared with a fixed coefficient input-output model, a SAM-based inverse enables a more complete analysis of employment multipliers, the impact of exogenous changes in government expenditures and foreign trade, etc. Moreover, income distribution effects can be studied as well. In a SAM for use in multiplier analysis, accounts considered exogenous, like some or all accounts for the government sector, are singled out and shown at the end. In addition, the structure of the SAM should then be oriented towards obtaining the most realistic proportionality assumptions. Realism may be further increased by estimating coherent sets of relevant elasticities to arrive at marginal instead of average expenditure propensities. In any case, the (cross-) classifications selected in the SAM will have a dominant influence on the outcomes of the analysis. For some purposes, the relative simplicity of the

multiplier approach is appealing. However, in several other applications the absence of supply constraints and of endogenous prices in this model is a serious limitation.

132. These shortcomings may be overcome in another important application of a SAM: its use in a so-called Applied General Equilibrium (AGE) model. These economy-wide models, which apply micro-economic insights at a meso-level, serve to simulate the effects on growth and income distribution of a range of policies, from trade liberalization measures to tax rate changes and structural adjustment packages. Minimal data requirements for AGE models are: (1) a base-year SAM, (2) a decomposition of SAM-values per category of goods and services (preferably including various types of labour and asset services) into appropriate price and volume components, (3) data on various stocks, like population and production capacity and, possibly, (4) additional data required for a more realistic derivation of relevant elasticities. This may be supplemented by econometric estimation of some parameters, on the basis of time-series data which are scaled such that the base- year values are in conformity with the concomitant SAM-values. The output of such a modelling exercise typically consists of a reproduction of the base-year SAM, which validates the model, and of a series of SAMs for future periods.

133. A distinctive feature of all SAM-based models is their reliance on complete balances, at a multi-sector level, of incomes and outlays of institutions and of supply and use of goods and services, usually including labour services. Ideally, the supply and use balances are maintained for values and volumes separately and for some assets as well. Another feature is that the structure of the model and the structure of the SAM are closely interlinked. To a lesser extent, this also applies to the parameter values. This means a departure from a model-specification which hinges on co-variations among time-series of considerable length. In turn, it implies that SAM-based models are less liable to the disadvantages of that approach, such as: (1) its use of proxy variables and independently estimated deflators for various transaction categories, which does not guarantee consistency; (2) its dependence on longer time-series, which in many cases are not available at a meso-level, and (3) its reliance on the constancy of relationships over a longer period, which is often questionable in view of various structural external shocks (energy crises) and continual institutional reforms (lifting trade barriers, large-scale privatizations, etc.).

134. The above examples illustrate that SAM-based models are particularly relevant to policy analyses in which the structural features of an economy play an important role. For instance, in a situation of structural adjustment one might use such models for simulating the macro-economic and distributional implications of price liberalization measures or, reversely, of proposals for a certain environmental levy. In analyses with a relatively short time-horizon, it can safely be assumed that many structural features can be represented by fixed coefficients. In longer-term models, feed-backs at the meso- level need to be incorporated more carefully. In both cases, a SAM, or preferably a more extended SESAME as sketched in section C.2 above, then serves as a framework to guarantee consistency, both in current and in

constant prices. However, until more timely SAMs with well-articulated financial accounts become available, these models have only limited relevance to short-term, monetary stabilization policies.

135. Finally, SAMs are suitable for use in a macro-economics teaching course, in view of their concise and conveniently arranged description of interrelations between economic processes, their function as a systematic data base for the joint derivation of monetary and non- monetary aggregate indicators and their close connection to flexible, economy-wide models of varying degrees of complexity.

TABLE XX.1: A Matrix Presentation of Several Consolidated Transactions and Balancing Items for the Total Economy

ACCOUNT	codes	Goods and Services	Production	Distribution of Income	Use of Income	Capital	Rest of the world, current & capital	TOTAL
		1	2	3&4&5	6	7	10&11	
0. Goods and Services	1		Intermediate consumption 1902		Final consumption expenditure 1391	Gross capital formation 412	Exports of goods and services 540	4245
I. Production	2	Output & Taxes on products & Subsidies (-) 3746						3746
II.1 & II.2 Distribution of Income	3 4 5		NET DOMESTIC PRODUCT 1622	Property income & Current taxes on income, wealth, etc. & Current transfers 1780			Compensation of employees & Property income & Current taxes & Current transfers from ROW 73	3475
II.4 Use of Income	6			NET DISPOSABLE INCOME 1614				1614
III.1 Capital	7		Consumption of fixed capital 222		NET SAVING 223	Capital transfers & Net acquisitions of land and other non-produced assets 62	Capital transfers receivable(+)/payable(-) from ROW & Net acquisitions of other non-produced assets by ROW -3	504
V.I, V.II & V.III.1 Rest of the world, current and capital	10 11	Imports of goods and services 499		Compensation of employees & Property income & Current taxes & Current transfers to ROW 81		NET LENDING(+) / NET BORROWING(-) of the total economy 30		610
TOTAL		4245	3746	3745		504	610	

ROW: Rest of the world.

Table XX.2: An Example of Assigning Transactions to Subaccounts in a Matrix

ACCOUNT	codes	Goods and Services	Production	Primary Distribution of Income	Secondary Distribution of Income	Use of Income	Capital	Rest of the world, current & capital	TOTAL
		1	2	3&4	5	6	7	10&11	
0. Goods and Services	1		Intermediate consumption 1902			Final consumption expenditure 1391	Gross capital formation 412	Exports of goods and services 540	4245
I. Production	2	Output & Taxes on products & Subsidies (-) 3746							3746
II.1 Primary Distribution of Income	3 4		NET DOMESTIC PRODUCT 1622	Property income 692				Compensation of employees & Property income from ROW1/ 61	2375
II.2 Secondary Distribution of Income	5			NET NATIONAL INCOME 1647	Current tax on income, wealth etc. & Current transfers 1088			Current taxes on income, wealth, etc. and Current transfers from ROW 12	2747
II.4 Use of Income	6				NET DISPOSABLE INCOME 1614				1614
III.1 Capital	7		Consumption of fixed capital 222			NET SAVING 223	Capital transfers & Net acquisitions of land and other non-produced assets 62	Capital transfers receivable(+)/payable(-) from ROW & Net acquisitions of other non-produced assets by ROW -3	504
V.I, V.II & V.III.1 Rest of the world, current and capital	10 11	Imports of goods and services 499		Compensation of employees & Property income to ROW1/ 36	Current tax on income, wealth etc. & Current transf. to ROW 45		NET LENDING(+) / NET BORROWING(-) of the total economy 30		610
TOTAL		4245	3746	2375	2747	1614	504	610	

ROW: Rest of the world.

1/ Including taxes on production and imports from (cell 3&4, 10&11) and to (cell 10&11, 3&4) the rest of the world.

Table XX.3: An Example of Inserting a Dummy Account in a Matrix

ACCOUNT		Goods and Services	Production	Primary Distribution of Income	Secondary Distribution of Income excl. Misc. Curr. Transf. Corp.	Gov.mt	Househ	NPIs	Misc.Curr Transfers	Use of Income	Capital	Rest of the world, current & capital	TOTAL
codes		1	2	3&4	5A				5B	6	7	10&11	
0. Goods and Services	1		Intermediate consumption 1902							Final consumption expenditure 1391	Gross capital formation 412	Exports of goods and services 540	4245
I. Production	2	Output & Taxes on products & Subsidies (-) 3746											3746
II.1 Primary Distribution of Income	3 4		NET DOMESTIC PRODUCT 1622	Property income 692								Compensation of employees & Property income from ROW1/ 61	2375
II.2 Secondary Distribution of Income	5A			98	10	4	66	0	4			Current taxes on income,wealth, etc. & Current transfers from ROW, excluding Miscellaneous curr.transfers 11 / 0 / 0	182
				NET NATIONAL INCOME 1369	35	96	483	0	Misc. current transfers 10				815
					59	289	5	0	28				1750
				0	0	0	0	0	0				0
	5B				Miscellaneous current transfers 2	10	38	0				Miscellan. current transfers from ROW 1	51
II.4 Use of Income	6				NET DISPOSABLE INCOME 71	385	1158	0					1614
III.1 Capital	7		Consumption of fixed capital 222							NET SAVING 223	Capital transfers & Net acquisitions of land and other non-produced assets 62	Capital transfers receivable(+)/payable(-) from ROW & Net acquisitions of other non-produced assets by ROW -3	504
V.I, V.II & V.III.1 Rest of the world, current and capital	10 11	Imports of goods and services 499		Compensation of employees & Property income to ROW1/ 36	Current taxes on income, wealth, etc.& Curr. transfers to ROW, excl. Miscellaneous current transfers 5	31	0	0	Miscell. current transfers to ROW 9		NET LENDING(+) / NET BORROWING(-) of the total economy 30		610
TOTAL		4245	3746	2375	182	815	1750	0	51	1614	504	610	

ROW: Rest of the world.

1/ Including Taxes on production and imports from (cell 3&4,10&11) and to (cell 10&11,3&4) the rest of the world.

TABLE XX 4: An Example of an Aggregate Social Accounting Matrix related to transactions

ACCOUNT (Classification)		0.Goods & Services (Products)	I.Production (Industries)	II 1.1 Generation of Income (Value-added Categories)	II.1.2 Allocation of Primary Income (Institutional Sectors)	II.2 Secondary Distribution of Income (Institutional Sectors)	II.4 Use of Income (Institutional Sectors)	III.1 Capital (Institutional Sectors)	Fixed Capital Formation (Industries)	III.2 Financial (Financial Assets)	V. Rest of the World I./II.Current	III.1 Capital	TOTAL
codes		1	2	3	4	5	6	7	8	9	10	11	
Goods & Services (Products)	1	Trade and transport margins 0	Intermediate consumption 1982				Final consumption expenditure 1391	Changes in inventories 7	Gross fixed capital formation 405		Exports of goods and services 540		4245
Production (Industries)	2	Output 3813											3813
Generation of Income (Value-added Categories)	3		NET VALUE ADDED, at basic prices 1489								Compens. of employees &Mixed income from ROW 6		1495
Allocation of Primary Income (Institutional Sectors)	4	Taxes on products - Subsidies 133		NET GENERATED INCOME, at basic prices 1493	Property income 882						Property inc.&Tax(-Subs)prod &imp. from ROW 55		2373
Secondary Distribution of Income (Institutional Sectors)	5				NET NATIONAL INCOME 1647	Current taxes on inc.,wealth,etc& Curr. transfers 1000					Curr.tax on income, etc & Curr. transf. from ROW 12		2747
Use of Income (Institutional Sectors)	6					NET DISPOSABLE INCOME 1614							1614
Capital (Institutional Sectors)	7						NET SAVING 223	Capital transfers 1/ 69		Borrowing 407		Capital transfers from ROW 0	699
Fixed Capital Formation (Industries)	8		Consumption of fixed capital 222					Acc fixed capital formation 183					405
Financial (Financial Assets)	9							Lending 437				NET LENDING of ROW -30	407
Rest of the World, Current	10	Imports of goods and services 499		Compens.of employees & Mixed income to ROW 2	Property income +Tax(-Subs)prod &imports to ROW 34	Curr.tax on inc. wealth,etc&Curr. transfers to ROW 45							580
Rest of the World, Capital	11							Capital transfers to ROW 3			CURRENT EXTERNAL BALANCE -33		-30
TOTAL		4245	3813	1495	2373	2747	1614	699	405	407	580	-30	

ROW Rest of the world.

1/ Including acquisitions less disposals of land and other non produced assets (except land in the case of external transactions).

TABLE XX 9: A Stylised Example of a Somewhat Disaggregated Social Accounting Matrix related to Transactions

ACCOUNT (Classification)			Goods & Services			Production			Generation of Income						Allocation of Primary Income				Secondary Distribution of Income				Use of Income				Capital				Fixed Capital Formation			Financial			Rest of the World		TOTAL
									Employee Compens			In ROW	Mixed Inc	Oper Surplus	Oth Taxes																						
TABLE XX 4 / XX 8 codes			Agriculture	Manufacturing	Services	Agriculture	Manufacturing	Services	Male	Fem	For					Hh Empl	Hh Other	Corp +NPI	Gov mt	Hh Empl	Hh Other	Corp +NPI	Gov mt	Hh Empl	Hh Other	Corp +NPI	Gov mt	Hh Empl	Hh Other	Corp +NPI	Gov mt	Agric	Manuf	Services	Curr & Dep	Loans	Other Asset	Current	Capital	
			1a	1b	1c	2a	2b	2c	3a	3b	3c	3d	3e	3f	3g	4a	4b	4c	4d	5a	5b	5c	5d	6a	6b	6c	6d	7a	7b	7c	7d	8a	8b	8c	8a	8b	8c	10	11	
Goods and Services	Agriculture	1a				3	71	14																21	12		0	0	1	0	0	0	0				7		12
	Manufacturing	1b				52	985	256																333	273		10	0	6	4	0	164	100				432		1350
	Services	1c	2	32	-34	0	102	508																139	253		350	0	1	1	0	7	50				101		1465
Production	Agriculture	2a	71	2	0																																	1810
	Manufacturing	2b	0	1670	88																																	1810
	Services	2c	14	220	1374																																	1810
Generation of Income	Compensation of Employees	Domestic: Male	3a				0	575	884																													1459
		Domestic: Female	3b				1	82	888																													971
		From Abroad: Non-resid.	3c				0	0	2																													2
		From Abroad: Resid. Abroad	3d																																			
	Mixed Income		3e				7	7	48																													62
	Net Operating Surplus		3f				10	88	310																													408
	Other Tax (-subs) on Prod		3g				-2	48	12																													58
Allocation of Primary Income	Employee Households		4a							510	352		0	2	1	0	0	66	0																			931
	Other Households		4b							158	44		1	68	2	0	4	210	0																			488
	Corporations & NPIs		4c												434	25	22	174	34																			689
	Government		4d	2	111	20									0	0	0	32	0																			166
Secondary Distribution of Income	Employee Households		5a													848				1	1	37	31															1018
	Other Households		5b														821			16	14	22	364															1237
	Corporations & NPIs		5c															66		51	16	10	0															143
	Government		5d																193	206	166	37	99															708
Use of Income	Employee Households		6a																	843																		843
	Other Households		6b																		815																	815
	Corporations & NPIs		6c																			71																71
	Government		6d																				393															393
Capital	Employee Households		7a																					48				1	1	0	1				0	5	0			54
	Other Households		7b																						70			2	2	6	2				0	45	1			120
	Corporations & NPIs		7c																							71		1	4	6	36				107	66	136			345
	Government		7d																								22	1	1	4	0				0	20	17			42
Fixed Capital Formation	Agriculture		8a				11																					0	0	1	0									12
	Manufacturing		8b					70																				1	10	51	0									62
	Services		8c						132																				1	27	92	23									143
Financial	Currency & Deposits		9a																									25	22	51	7									105
	Loans		9b																									0	0	100	0									100
	Other Assets		9c																									30	67	77	0									174
Rest of the World	Current		10	48	367	72					2		0			0	0	27	7	0	1	0	31																	488
	Capital		11																									0	0	0	0							-30		-30
TOTAL			130	2640	1457	75	1013	1627	648	500	2	0	54	427	66	873	847	730	323	910	831	162	915	543	615	71	305	66	130	416	77	16	171	210	107	146	154	580	-30	

ROW: Rest of the world.

TABLE XX.6 A Stylized Example of a Detailed Submatrix: Total NET VALUE ADDED, at basic prices

(TABLE XX.4 cell: 3,2) Classifications						INDUSTRIES (by ISIC tabulation categories)													TOTAL
					Agriculture, hunting and forestry	Fishing	Mining and quarrying	Manufacturing	Electricity, gas and water supply	Construction	Wholesale, retail trade& repair motor vehic. pers.househ.	Hotels and restaurants	Transport, storage & communication	Financial intermediation	Real estate and business services	Public administration and defense	Education	Health and social work	Other community, social&personal serv., incl priv.HH.SQ	
TABLE XX.4 / XX.5 / XX.6 codes					2aA	2aB	2bC	2bD	2bE	2bF	2cG	2cH	2cI	2cJ	2cK	2cL	2cM	2cN	2cO	2
Compensation of Employees	DOMESTIC	Resident MALE	Agricultural	Rural	3aA	6.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	6.9
				Urban	3aB	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.6
			Manual	Rural	3aC	0.2	0.0	3.2	18.1	0.6	11.1	4.7	0.3	10.6	0.4	0.1	0.6	0.4	0.1	0.9	51.3
				Urban	3aD	0.0	0.0	1.8	150.7	0.4	40.6	10.0	1.1	29.0	2.1	0.5	3.4	0.5	0.4	2.3	251.6
			Clerical, Sales & Service	Rural	3aE	0.2	0.0	0.5	5.1	0.0	0.0	7.6	0.4	2.0	5.2	0.9	6.0	0.3	0.0	1.2	30.2
				Urban	3aF	0.0	0.1	1.5	47.7	1.0	3.3	16.7	1.2	6.7	9.8	4.2	22.7	0.3	0.2	3.6	119.7
			Professional, Managerial etc.	Rural	3aG	0.1	0.0	1.7	15.2	0.2	2.3	1.8	0.4	1.3	2.6	1.8	10.5	0.9	0.5	0.9	40.2
				Urban	3aH	0.0	0.0	2.5	49.5	2.3	3.9	3.2	0.9	3.7	8.0	0.4	41.7	9.9	2.0	2.3	130.3
		Resident FEMALE	Agricultural	Rural	3bI	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
				Urban	3bJ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			Manual	Rural	3bK	0.0	0.0	0.0	4.9	0.0	0.0	0.2	0.2	0.1	0.1	0.0	0.3	0.2	0.1	0.4	6.5
				Urban	3bL	0.0	0.0	0.0	11.7	0.0	0.1	0.4	0.6	0.2	0.4	0.2	1.3	0.2	0.4	1.3	16.8
			Clerical, Sales & Service	Rural	3bM	0.0	0.0	0.4	4.8	0.1	1.2	15.6	1.4	1.4	2.3	1.1	6.9	2.1	0.3	11.9	49.5
				Urban	3bN	0.0	0.0	1.3	42.7	2.5	4.3	36.5	0.2	3.9	7.8	0.6	35.3	2.4	1.0	10.0	160.0
			Professional, Managerial etc.	Rural	3bO	0.0	0.0	0.0	1.1	0.0	0.1	0.5	0.0	0.0	0.7	0.2	3.7	4.6	1.2	2.7	14.8
				Urban	3bP	0.0	0.0	0.1	6.3	0.1	0.3	0.8	0.2	0.1	2.6	0.8	10.0	5.2	4.0	5.5	45.0
		Non-resident employees			3cO	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.1	0.2	0.0	0.0	1.2	0.0	0.0	0.0	1.9
	Residents in non-resid.enterp				3dR																
Net Mixed Income	Rural				3eS	0.3	0.7	0.1	0.9	0.0	0.5	4.2	0.2	0.8	0.0	3.3	0.0	0.0	2.0	1.6	21.3
	Urban				3eT	0.1	0.1	0.0	3.6	0.0	1.7	0.0	1.7	4.2	0.0	3.0	0.0	0.0	5.7	3.7	32.7
Net Operating Surplus	Owner-occupied housing				3fU	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0
	NPIs & Government unincorp.				3fV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.0	29.0
	Corporate	Public			3fW	0.1	0.0	2.1	4.8	12.9	0.6	0.2	0.1	4.8	2.5	1.4	0.0	0.0	11.0	10.3	50.0
		National private			3fX	0.5	0.2	0.4	40.5	0.1	16.0	36.0	4.3	0.7	37.0	120.0	0.0	0.0	2.7	22.4	301.4
		Foreign			3fY	0.0	0.0	1.4	19.2	0.0	0.2	3.0	0.7	2.4	3.7	2.0	0.0	0.0	0.0	0.0	33.0
Other Taxes (-Subs.) on Production					3gZ	-2.0	0.0	-2.0	42.0	5.0	3.0	0.0	0.0	-6.0	9.0	4.0	0.0	0.0	0.0	5.0	50.0
SUBTOTALS:																					
Domestic Compensation of Employees						8	1	13	358	16	68	98	13	60	42	25	153	33	11	51	950
- Resident Male					3a	6.9	0.8	11.1	286.4	13.3	62.0	44.0	4.3	54.1	28.1	15.9	85.3	10.3	3.2	11.2	644.9
- Resident Female					3b	1.0	0.1	1.9	71.5	2.7	6.0	54.0	8.8	5.7	13.9	9.1	66.5	14.7	7.8	39.8	303.2
- Non-resident					3c	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.1	0.2	0.0	0.0	1.2	0.8	0.0	0.0	1.9
Mixed Income & Operating Surplus						16	1	4	69	13	19	54	7	21	44	135	8	8	22	76	401
- Net Mixed Income					3e	0.4	0.8	0.1	4.5	0.0	2.2	12.2	1.9	5.1	0.0	7.2	0.0	0.0	0.3	5.3	54.8
- Net Operating Surplus					3f	9.6	0.2	3.9	64.5	13.0	16.8	41.8	5.1	15.9	44.8	127.8	0.0	0.0	13.7	70.7	427.8
NET VALUE ADDED, at basic prices					3	22	2	15	469	34	90	152	20	75	95	164	153	33	33	132	1489

TABLE XX.7 An Example of an Aggregate Social Accounting Matrix with Separate Balance Sheets for Produced, Non-produced and Financial Assets

ACCOUNT (CLASSIFICATION)		I. Goods and Services (Products) 1	I. Production (Industries) 2	II.1.1 Generation of Income (Value-added Categories) 3	II.1.2 - 4 Income Distribution & Use (Institutional Sectors) 4&5&6	III.1 Capital (Institutional Sectors) 7	III.2 Financial (Institutional Sectors) 9	III.3 Oth. Changes in Assets (Institutional Sectors) 13	IV.2 Changes between Balance Sheets (Asset Types) 14	IV.1.1/V.3.1 Balance Sheets (Institutional Sectors) 15	IV.1.2 - 3.2 Asset Type Balance Sheets: Produced Assets (Industries) 16	Non-produced Assets (Types) 17	Financial Assets (Types) 18	V. Rest of the World: I - III.1 Current and Capital 10&11	V. Rest of the World: III.2 Financial 19	V. Rest of the World: III.3 Other Changes in Assets 20	IV.1, IV.3 Balance Sheets 21	TOTAL
Goods and Services (Products)	1	Trade and transport margins 0	Intermediate consumption 1902		Final consumption expenditure 1391						Gross capital formation 412			Exports of goods and services 540				4245
Production (Industries)	2	Output 3613																3613
Income Generation (Value-added Categories)	3		NET VALUE ADDED at basic prices 1489											Compensation of employees from ROW 0				1495
Distribution and Use of Income (Institutional Sectors)	4 5 6	Taxes on products and Subsidies on products (-) 123		NET GENERATED INCOME, at basic prices 1493	Property income, Current taxes on income, wealth etc. & Current transfers 1780									Property income, Current taxes and Current transfers from ROW 67				3473
Capital (Institutional Sectors)	7				NET SAVING 223	Capital transfers 62								Capital transfers from ROW 0				285
Financial (Institutional Sectors)	9												Net Acquisition of assets and (-)liabilities 30					30
Balance of Transactions, financial & non-prod. assets	12						NET LENDING of the total economy 30	Net Purchases of non-produced assets 0							NET LENDING of ROW -30	Net Acquisition by ROW non-producing assets 0		0
Other Changes in Assets (Institutional Sectors)	13										Net Other changes in assets 85	Net Other changes in assets 1/ -59	Net Other changes in assets & (-)liabilities 18					24
Changes between Balance Sheets (Asset Types)	14					CHANGES IN NET WORTH DUE TO SAVING & CAPITAL TRANSFERS 220		CHANGES IN NET WORTH DUE TO OTHER CHANGES IN ASSETS 24						NET WORTH CHANGES: CURRENT EXTERNAL BALANCE AND CAPITAL TRANSFERS -20		CHANGES IN NET WORTH DUE TO OTHER CHANGES IN ASSETS -18		186
Balance Sheets (Institutional Sectors)	15								TOTAL CHANGES NET NAT. WORTH 244		Opening Stocks 6047	Opening Stocks 3875	Opening Assets &(-)Liabilities 90					10256
Balance Sheets by Type of Assets: Produced Assets (Industries)	16		Consumption of fixed capital 222							CLOSING STOCKS 6302								6524
Balance Sheets by Type of Assets: Non-produced Assets (Types)	17									CLOSING STOCKS 3816								3816
Balance Sheets by Type of Assets: Financial Assets (Types)	18									CLOSING ASSETS &(-) LIABILITIES 138							CLOSING ASSETS &(-) LIABILITIES -138	0
Rest of the World Current and Capital	10 11	Imports of goods and services 409		Compensation of employees to ROW 2	Property income, Current taxes & Current transfers to ROW 79	Capital transfers to ROW 2												583
Rest of the World Financial	19												Net Acquisition of assets and (-)liabilities -30					-30
Rest of the World Other Changes in Assets	20											Acquisitions &(-) disposals by ROW 0	Net Other changes in assets & (-)liabilities -18					-18
Rest of the World Balance Sheets	21								TOTAL CHANGES NET ROW WORTH -48				Opening Assets &(-)Liabilities -90					-138
Total		4245	3613	1495	3473	285	30	24	196	10256	6524	3816	0	583	-30	-18	-138	

ROW: Rest of the World